

## CLAIMS

## WHAT IS CLAIMED IS:

- [c1] 1. A method for estimating a length of time required to download one or more application programs onto a wireless device over a wireless network, said method comprising operations of:
- the wireless device exchanging one or more data files with a server, said data files including at least information representing a size of the one or more application programs available for downloading onto the wireless device;
  - during the exchanging, at least one of the server and wireless device measuring one or more data transfer rates for the exchanging operation;
  - receiving user input of one or more application programs to download;
  - at least one of the server and wireless device:
    - utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device; and
    - the wireless device providing an output of the estimated time.
- [c2] 2. The method of claim 1, the exchanging operation comprising:
- the wireless device sending one or more requests to the server to obtain the data files from the server.
- [c3] 3. The method of claim 1, the exchanging operation comprising:
- the data files containing information describing the one or more application programs available for download onto the wireless device.
- [c4] 4. The method of claim 1, the exchanging operation comprising:
- the server transmitting the application programs for download onto the wireless device in response to operation of the wireless device to purchase the one or more application programs.

- [c5]           5.       The method of claim 1, the measuring operation comprising operations of:  
each of the one or more data files sent to the wireless device from the server programmed  
to contain information representing a size of the data file;  
the wireless device measuring a length of time required to download each data file onto  
the wireless device; and  
the wireless device dividing the size of each data file by the measured length of time  
corresponding to each data file.
- [c6]           6.       The method of claim 1, the measuring operation comprising operations of:  
the wireless device notifying the server immediately upon completion of the downloading  
of each of the one or more data files; and  
in response, the server dividing a size of each of the one or more data files by a length of  
time between the server sending each data file to the wireless device, and the wireless device  
notifying the server of the completed download.
- [c7]           7.       The method of claim 1, the utilizing operation comprising operations of:  
calculating an average data transfer rate by averaging all of the calculated data transfer  
rates; and  
dividing the size of each of the one or more selected application programs by the average  
data transfer rate.
- [c8]           8.       The method of claim 1, the utilizing operation comprising operations of:  
calculating a weighted data transfer rate by averaging all of the calculated data transfer  
rates, giving more weight to the data transfer rates calculated closer in time to the operation of the  
wireless device to select the one or more application programs for download; and  
dividing the size of each of the one or more selected application programs by the  
weighted data transfer rate.
- [c9]           9.       The method of claim 1, the utilizing operation comprising operations of:  
calculating a moving data transfer rate by averaging the calculated data transfer rates for a  
period of time immediately preceding the operation of the wireless device to select the one or  
more application programs for download; and

dividing the size of each of the one or more selected application programs by the moving data transfer rate.

- [c10] 10. The method of claim 1, the utilizing operation comprising operations of:
- calculating a moving weighted data transfer rate by averaging the calculated data transfer rates for a period of time immediately preceding the operation of the wireless device to select the one or more application programs for download and giving more weight to the calculated data transfer rates closer in time to the operation of the wireless device to select the one or more application programs for download; and
  - dividing the size of each of the one or more selected application programs by the moving weighted data transfer rate.

- [c11] 11. A wireless device apparatus configured to perform a method for estimating a length of time required to download one or more application programs onto a wireless device over a wireless network, said method comprising operations of:
- the wireless device exchanging one or more data files with a server, said data files including at least information representing a size of the one or more application programs available for downloading onto the wireless device;
  - during the exchanging, measuring one or more data transfer rates for the exchanging operation;
  - receiving user input of one or more application programs to download;
  - utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device; and
  - providing an output of the estimated time.

- [c12] 12. The apparatus of claim 11, further configured to perform operations of:
- sending one or more requests to the server to obtain the data files from the server.

- [c13] 13. The apparatus of claim 11, further configured to perform operations of:
- measuring a length of time required to download each data file; and

dividing a size of each data file by the measured length of time corresponding to each data file.

- [c14] 14. The apparatus of claim 11, further configured to perform operations of:  
calculating an average data transfer rate by averaging all of the calculated data transfer rates; and  
dividing the size of each of the one or more selected application programs by the average data transfer rate.

- [c15] 15. The apparatus of claim 11, further configured to perform operations of:  
calculating a weighted data transfer rate by averaging all of the calculated data transfer rates, giving more weight to the data transfer rates calculated closer in time to the operation of the wireless device to select the one or more application programs for download; and  
dividing the size of each of the one or more selected application programs by the weighted data transfer rate.

- [c16] 16. The apparatus of claim 11, further configured to perform operations of:  
calculating a moving data transfer rate by averaging the calculated data transfer rates for a period of time immediately preceding the operation of the wireless device to select the one or more application programs for download; and  
dividing the size of each of the one or more selected application programs by the moving data transfer rate.

- [c17] 17. The apparatus of claim 11, further configured to perform operations of:  
calculating a moving weighted data transfer rate by averaging the calculated data transfer rates for a period of time immediately preceding the operation of the wireless device to select the one or more application programs for download and giving more weight to the calculated data transfer rates closer in time to the operation of the wireless device to select the one or more application programs for download; and  
dividing the size of each of the one or more selected application programs by the moving weighted data transfer rate.

[c18] 18. A wireless device configured to estimate a length of time required to download one or more application programs onto a wireless device over a wireless network, the telephone comprising:

first means for exchanging one or more data files with a server, said data files including at least information representing a size of the one or more application programs available for downloading onto the wireless device;

second means for, during the exchanging, measuring one or more data transfer rates for the exchanging operation;

third means for receiving user input of one or more application programs to download;

fourth means for utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device; and

fifth means for providing an output of the estimated time.

[c19] 19. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for representing to a user of a wireless device the length of time required to download one or more application programs onto the wireless device over a wireless network, said method comprising operations of:

exchanging one or more data files with a server, said data files including at least information representing a size of one or more application programs available for downloading onto the wireless device;

during the exchanging, measuring one or more data transfer rates for the exchanging operation;

receiving user input of one or more application programs to download;

utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device; and

providing an output of the estimated time.

- [c20] 20. An information exchange system comprising:
- one or more wireless devices programmed to perform operations over a wireless network comprising:
    - exchanging one or more data files with a server, said data files including at least information representing a size of one or more application programs available for downloading onto the wireless device;
    - notifying the server immediately upon completion of the downloading of each of the one or more data files sent from the server;
    - receiving user input of one or more selected application programs to download;
    - receiving an estimate of time to download the selected application programs from the server;
    - providing an output of the estimated time;
  - one or more servers, each server programmed to perform operations over a wireless network comprising:
    - during the exchanging, measuring one or more data transfer rates;
    - utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device; and
    - sending the time estimate to the wireless device.
- [c21] 21. The system of claim 20, the exchanging operation comprising operations of:
- the wireless device sending one or more requests to the server to obtain the data files from the server.
- [c22] 22. The system of claim 20, the exchanging operation comprising operations of:
- the server initiating a transmission of the data files to the wireless device.
- [c23] 23. The system of claim 20, the operation of during the exchanging the server calculating one or more data transfer rates further comprising operations of:
- the server dividing a size of each of the one or more data files by a length of time between the server sending each data file to the wireless device, and the wireless device notifying the server of the completed download.

[c24] 24. An information exchange system comprising:  
one or more wireless devices programmed to perform operations over a wireless network comprising:

exchanging one or more data files with a server, said data files including at least information representing a size of one or more application programs available for downloading onto the wireless device;

during the exchanging, measuring one or more data transfer rates for the exchanging operation;

receiving user input of one or more application programs to download;

utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device;

providing an output of the estimated time; and

one or more servers, each server programmed to perform operations over a wireless network comprising:

exchanging the one or more data files with the wireless device.

[c25] 25. The system of claim 24, the exchanging operation comprising operations of:  
the wireless device sending one or more data requests to the server to obtain the data files from the server.

[c26] 26. The system of claim 24, the exchanging operation comprising operations of:  
the server initiating a transmission of the data files to the wireless device.

[c27] 27. An information exchange system comprising:  
wireless device means for performing operations comprising:  
exchanging one or more data files with a server, said data files including at least information representing a size of one or more application programs available for downloading onto the wireless device;  
during the exchanging, measuring one or more data transfer rates for the exchanging operation;

receiving user input of one or more application programs to download;  
 utilizing the one or more measured data transfer rates and the size of the selected one or more application programs to estimate a length of time required to download the one or more application programs onto the wireless device;  
 providing an output of the estimated time; and  
 server means for performing operations comprising:  
 exchanging the one or more data files with the wireless device.

[c28] 28. A method for estimating a length of time required to download a download file onto a wireless device, comprising the steps of:

receiving a data file having a size of the data file;  
 measuring a length of time required to receive the data file;  
 calculating a data transfer rate of the data file using the size of the data file and the measured length of time required to receive the data file;  
 receiving the size of the download file; and  
 estimating the length of time to download the download file using the calculated data transfer rate and the received size of the download file.

[c29] 29. The method of claim 28, wherein the size of the download file is contained in the data file.

[c30] 30. The method of claim 28, further comprising the step of displaying a download gauge on the wireless device indicating the length of time to download the download file.

[c31] 31. The method of claim 30, wherein the download gauge is updated to indicate a progress of downloading the download file.

[c32] 32. The method of claim 28, wherein the data transfer rate is calculated by a server.

[c33] 33. The method of claim 28, wherein the data transfer rate is calculated by the wireless device.



- [c34] 34. The method of claim 28, further comprising the steps of:
- receiving one or more second data files, each containing an associated size field, wherein each associated size field indicates the size of the data file to which it is associated;
  - measuring a length of time required to receive each of the one or more data files; and
  - calculating a second data transfer rate using the data transfer rate and the size of each of the received one or more second data files and the length of time required to receive each of the one or more second data files.
- [c35] 35. The method of claim 34, wherein the step of calculating the second data transfer rate is an averaged based on the data transfer rates of the data file and the one or more second data files.
- [c36] 36. The method of claim 34, wherein the step of calculating the second data transfer rate is time weighted based on a when the data file and the one or more second data files were received.
- [c37] 37. The method of claim 28, wherein the download file is an application.
- [c38] 38. A method of method for estimating a length of time required to download a download file onto a wireless device, comprising the steps of:
- receiving one or more data files, each containing an associated size field, wherein each associated size field indicates the size of the data file to which it is associated and one data file contains the size of the download file;
  - measuring a length of time required to receive each of the one or more data files;
  - calculating a data transfer rate for each of the one or more data files using the size of each of the one or more data files and the measured length of time required to receive each of the one or more data files;
  - calculating a combined data transfer rate using the data transfer rate of each of the one or more data files; and
  - estimating the length of time to download the download file using the combined data transfer rate and the received size of the download file.

- [c39] 39. The method of claim 38, further comprising the steps of:  
displaying a download gauge on the wireless device indicating the length of time to download the download file; and  
updating the download gauge on the display to indicate a progress of downloading the download file.
- [c40] 40. The method of claim 38, wherein the combined data transfer rate is calculated by a server.
- [c41] 41. The method of claim 38, wherein the combined data transfer rate is calculated by the wireless device.
- [c42] 42. The method of claim 38, wherein the step of calculating the combined data transfer rate is an averaged based on the calculated data transfer rates of the one or more data files.
- [c43] 43. The method of claim 38, wherein the step of calculating the combined data transfer rate is a time weighted calculation based on when the one or more data files were received.
- [c44] 44. A computer-readable medium containing computer-executable instructions for estimating the length of time required to download a download file, that when executed comprise the steps of:  
receiving one or more data files, each containing an associated size field, wherein each associated size field indicates the size of the data file to which it is associated and one data file contains the size of the download file;  
measuring a length of time required to receive each of the one or more data files;  
calculating a data transfer rate for each of the one or more data files using the size of each of the one or more data files and the measured length of time required to receive each of the one or more data files;  
calculating a combined data transfer rate using the data transfer rate of each of the one or more data files; and

estimating the length of time to download the download file using the combined data transfer rate and the received size of the download file.

[c45] 45. A system for estimating the length of time required to download a download file, comprising:

means for receiving one or more data files, each containing an associated size field, wherein each associated size field indicates the size of the data file to which it is associated and one data file contains the size of the download file;

means for measuring a length of time required to receive each of the one or more data files;

means for calculating a data transfer rate for each of the one or more data files using the size of each of the one or more data files and the measured length of time required to receive each of the one or more data files;

means for calculating a combined data transfer rate using the data transfer rate of each of the one or more data files; and

means for estimating the length of time to download the download file using the combined data transfer rate and the received size of the download file.